CLAIMS

1. An imaging system including a photoreceptor section for generating an electric signal responsive to luminosity of an object, an amplifier section for amplifying an output signal of said photoreceptor section, a plurality of memory sections for storing the electric signal amplified by said amplifier section in form of a current signal, a load section for converting current outputs from said memory sections into voltages, an arithmetic section for operating an output signal from said load section, an output section for externally outputting a result of the operation by said arithmetic section, and a drive control section for controlling driving of said sections, characterized in:

said drive control section having a drive control mode for controlling one of said memory sections to store a current signal corresponding to a reference signal level, controlling the other of said memory sections to store a current signal corresponding to luminosity of an object while progressing integration thereof with time, and controlling said arithmetic section to compare luminosity of the object with the reference signal level on the basis of current signals read out from said memory sections; and

said arithmetic section outputting an identifying signal at the moment when the signal

indicative of luminosity of the object exceeds the reference signal level.

2. The imaging system according to claim 1 wherein said drive control section has a different drive control mode for controlling said memory sections to store current signals corresponding to luminosity of the object at different points of time, respectively, and controlling said arithmetic section to compare luminosity of the object at respective points of time, based on current signals read out from respective said memory sections, and said arithmetic section outputs an identifying signal at the moment when the signal indicative of luminosity of the object exceeds the reference signal level.

3. The imaging system according to claim 1 wherein said amplifier section includes mirror transistors so connected that gate electrodes thereof are opposed to each other, and amplifies a current signal according to the current mirror principle.

4. The imaging system according to claim 1 wherein said memory sections store current signals according to the current copy principle.

5. The imaging system according to claim 1 wherein said sections are provided for each pixel, and said imaging system further comprises an optical area having a matrix arrangement of a number of pixels aligned in rows and columns, a drive circuit for

generating signals for driving respective said pixels aligned in said optical area, and an output circuit for externally outputting output signals from respective said pixels, which all are packaged on a common circuit chip.

6. A drive control method of an imaging system including a photoreceptor section for generating an electric signal responsive to luminosity of an object, an amplifier section for amplifying an output signal of said photoreceptor section, a plurality of memory sections for storing the electric signal amplified by said amplifier section in form of a current signal, a load section for converting current outputs from said memory sections into voltages, an arithmetic section for operating an output signal from said load section, and an output section for externally outputting a result of the operation by said arithmetic section, which method realizes a drive control mode comprising:

(a) a step of storing a current signal corresponding to a reference signal level in one of said memory sections;

(b) a step of storing a current signal corresponding to luminosity of an object in the other of said memory sections while progressing integration thereof with time;

(c) a step of comparing a reference signal level and luminosity of the object in said arithmetic

section, based on said current signals read out from said memory sections; and

(d) a step of outputting an identifying signal from said arithmetic section at the moment when the signal indicative of luminosity of the object exceeds the reference signal level,

then measuring a period of time required for the luminosity of the object measured by said identifying signal output in said step (d) to exceed said reference signal level, and converts the luminosity of the object in an analog value to a digital value on the basis of a result of the measurement.

7. The drive control method of an imaging system according to claim 6 further realizing a different drive control mode comprising:

(p) a step of storing current signals corresponding to luminosity of the object at different points of time in respective said memory sections;

(q) a step of comparing luminosity of the object at different points of time in said arithmetic section on the basis of current signals read out from said memory sections; and

(r) a step of outputting an identifying signal from said arithmetic section at the moment when luminosity of the object changes,

and thereby operating changes of luminosity of the object with time at a high speed.

8. The drive control method of an imaging system according to claim 6 wherein said amplifier section includes mirror transistors so connected that gate electrodes thereof are opposed to each other, and amplifies a current signal according to the current mirror principle.

9. The drive control method of an imaging system according to claim 6 wherein said memory sections store current signals according to the current copy principle.

10. The drive control method of an imaging system according to claim 6 wherein said sections are packaged on a common circuit chip.

11. An imaging system including a photoreceptor section for generating an electric signal responsive to luminosity of an object, an amplifier section for amplifying an output signal of said photoreceptor section, a plurality of memory sections for storing the electric signal amplified by said amplifier section in form of a current signal, a comparator section for introducing and comparing signals read out from said memory sections into voltages, and an output section for externally outputting a result of the comparison by said comparator section as a pixel signal, characterized in:

one of said memory sections storing a current signal corresponding to a reference signal level

whereas the other of said memory sections stores a current signal corresponding to luminosity of an object; and

said comparator section comparing said reference signal level input from said one of the memory sections with a signal input from the other memory section while gradually raising said reference signal level with time.

12. An imaging system including a photoreceptor section for generating an electric signal responsive to luminosity of an object, an amplifier section for amplifying an output signal of said photoreceptor section, a plurality of memory sections for storing the electric signal amplified by said amplifier section in form of a current signal, a comparator section for introducing and comparing signals read out from said memory sections into voltages, a bias section for adding a bias signal to respective signals input to said comparator section, and an output section for externally outputting a result of the comparison by said comparator section as a pixel signal, characterized in:

one of said memory sections storing a current signal corresponding to a reference signal level whereas the other of said memory sections stores a current signal corresponding to luminosity of an object; and

said bias section adding a bias signal to the signal input to said one of the memory sections such that said reference signal level gradually rises with time.

13. The imaging system according to claim 12 wherein said amplifier section includes mirror transistors so connected that gate electrodes thereof are opposed to each other, and amplifies a current signal according to the current mirror principle.

14. The imaging system according to claim 12 wherein said memory sections store current signals according to the current copy principle.

15. The imaging system according to claim 12 wherein said sections are provided for each pixel, and said imaging system further comprises an optical area having a matrix arrangement of a number of pixels aligned in rows and columns, a drive circuit for generating signals for driving respective said pixels aligned in said optical area, and an output circuit for externally outputting output signals from respective said pixels, which all are packaged on a common circuit chip.

16. A drive control method of an imaging system of a type including a photoreceptor section for generating an electric signal responsive to luminosity of an object, an amplifier section for amplifying an output signal of said photoreceptor section, and a

plurality of memory sections for storing the electric signal amplified by said amplifier section in form of a current signal, thereby to output a result of comparison of signals read out from said memory sections as a pixel signal, comprising:

(a) a step of storing a current signal corresponding to a reference signal level in one of said memory sections;

(b) a step of storing a current signal corresponding to luminosity of an object in the other of said memory sections;

(c) a step of raising the reference signal level read out from said one of the memory sections gradually with time;

(d) a step of comparing the current signal read out from said other memory section with said reference signal level gradually raised with time by said step (c); and

(e) a step of outputting a result of comparison by said step (d) as a pixel output.

17. The imaging system according to claim 16 wherein said amplifier section includes mirror transistors so connected that gate electrodes thereof are opposed to each other, and amplifies a current signal according to the current mirror principle.

18. The imaging system according to claim 16 wherein said memory sections store current signals

according to the current copy principle.